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FINAL REPORT

November 1952

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CHAPTER TWELVE

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### AGARD

#### I. Introduction

During the writer's mission he was asked by Dr. Theodore von Karman, Chairman of the Air Force Scientific Advisory Board, to prepare a proposal for the formation of a Geophysics Panel in AGARD, the Advisory Group for Aeronautical Research and Development. Because the writer drew on his knowledge of international activity in Geophysics, gained to a great extent through his work with ATIC, a separate chapter of an information character is added to this report.

#### II. AGARD and Its Functions

1. As background for the preparation of the memorandum regarding a geophysics panel in AGARD, the writer was briefed on the purpose and operations of AGARD. The reader must remember that this is a new organization in NATO which in a sense is like a NATO Scientific Advisory Board. It has to operate on essentially unclassified material. Dr. von Karman is the Chairman of AGARD. Dr. Frank L. Wattendorf is the Director of the Secretariat, AGARD. Its headquarters are in the Palais de Chaillot, Paris, France. We are attaching some descriptive material which will provide ATIC with useful information regarding some of the initial activities of AGARD.

2. We reproduce here an abstract of the AGARD Charter as approved by the Standing Group, NATO.

"The Standing Group, NATO, approved on 24 January 1952 the establishment of the Advisory Group for Aeronautical Research and Development (AGARD) with the following provisos:

"(1) The Group be established on a trial basis for an initial period of two years.

"(2) The Group be advisory to the Standing Group and be composed of one or two civilian scientific representatives from each NATO country.

(Note: It is understood that in some countries the term 'civilian' includes certain individuals having military status who are, in fact, engaged in essentially scientific activities).

"(3) The objective of the Group to be the bringing together of leading aeronautical personalities of the NATO nations with a view to recommending effective ways to utilize their research and development personnel and facilities for the common benefit of the NATO Community.

"(4) The Group to concentrate its activities on matters of such security classification, the free exchange of information on which is permitted by existing national security policies. Questions involving disclosure of information relating to matters on which free exchange is not authorized, will be accomplished within the Group by negotiation

and in accordance with the various national laws and policies."

3. There are at present four working panels in AGARD, as follows:

- a. Combustion Research
- b. Methods of Experimentation in Flight
- c. Aeromedicine, the Human Element in Flight
- d. Wind Tunnels.

### III. The Recommendation for a Geophysics Panel

"MEMORANDUM TO THE CHAIRMAN, Advisory Group for Aeronautical Research and Development.

SUBJECT: Proposal for the formation of a Geophysics Panel.

"1. Following discussions in Pasadena, California, with Dr. Theodore von Karman on July 6, 1952, and with Dr. Frank I. Wattendorf and Major George D. Colchagoff, USAF, in Paris on August 8, 1952, it is recommended that a Geophysics Panel be formed in AGARD.

"2. The principal functions of this panel would be to advise NATO on current developments and problems in geophysics (including certain aspects of astrophysics), which will help support the programs of aeronautical research and development in the NATO countries.

"3. It is proposed that the Geophysics Panel will prepare as soon as possible a list of problems and principal investigations in these fields of geophysics (and astrophysics) which are of particular interest to aeronautical research and development in the NATO countries.

"4. It is proposed that the Geophysics Panel concentrate initially on the problems related to aurora and airglow. These problems involve considerable interest on the part of students of geomagnetism, solar physics, ionosphere physics, magnetohydrodynamics, solar-terrestrial relationships, chemical kinetics in the atmosphere, meteors, ozone, sound propagation, atmospheric motions, radio-astronomy and the physics of comets. This list itself shows the wide range of interests which are brought together in the auroral and airglow studies, and the possible areas

of overlapping with aeronautical research. Some of this has already been explored in the November 1951 Symposium on the Physics and Medicine of the Aeropause, which is described in the recently published book on 'Physics and Medicine of the Aeropause', the University of New Mexico Press (1952), edited by Brig. Gen. J.C. Benson and Dr. C.S. White. This brought together for the first time aeronautical engineers, students of the upper atmosphere and students of aviation medicine.

"5. It is suggested that similar symposia be arranged for the purpose of bringing together scientists interested in the physics of the upper atmosphere and certain areas of astrophysics, with aeronautical research scientists in the fields of combustion, aerodynamics and the appropriate fields.

"6. The following is a list of suggested names from which members of the proposed panel might be selected:

Prof. S. Chapman (England)  
 Dr. Lloyd Berkner (USA)  
 Prof. J. Coulomb (France)  
 Prof. H.U. Sverdrup (Norway)  
 Dr. F. Swings (Belgium)  
 Dr. M. Nicolet (Belgium)  
 Dr. Martyn (Australia)  
 Dr. F.T. Davies (Canada)  
 Dr. D. Barbier (France)  
 Dr. E.L. Whipple (USA)  
 Dr. L.V. Wilkes (England)  
 Dr. L. Herang (Norway)  
 Dr. Massey (England)  
 Dr. W. Petrie (Canada)  
 Dr. W.W. Kellogg (USA)

"7. It is recommended that cross representation from the panels of AGARD be added to this Geophysics Panel as appropriate.

"Respectfully submitted,

J. Kaplan, Chairman  
 Panel on Geophysics Research  
 USAF Scientific Advisory Board"

#### IV. Further Comments

1. The preliminary discussions of the desirability of establishing a Geophysics Panel in AGARD, revealed that the developments of the relationships between geophysics and the armed forces in the U. S., are considerably ahead of those

in the other NATO countries. Since from the Air Force viewpoint, Geophysics deals principally with the physical environment of flight, it should not take much discussion to realize that the Air Force has a large stake in this field of research. The fact that even in France and England surprise was expressed at the great amount of Air Force interest in Geophysics, might indicate indirectly that Russia is also behind us. As he has stated so often, this writer believes that surprising discoveries will come out of man's efforts to understand, escape and control his environment. Radar is a product of ionospheric research, and this is part of Geophysics. Who knows what discovery will come out of further geophysical research, which may affect air warfare as did radar?